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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,224	09/18/2003	Bernhard Jakoby	10191/3108	8465
26646	7590	07/08/2004	EXAMINER	
KENYON & KENYON ONE BROADWAY NEW YORK, NY 10004				LARKIN, DANIEL SEAN
		ART UNIT		PAPER NUMBER
		2856		

DATE MAILED: 07/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.	Applicant(s)	
10/666,224	JAKOBY ET AL.	
Examiner	Art Unit	
Daniel S. Larkin	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) Responsive to communication(s) filed on \_\_\_\_\_.  
2a) This action is FINAL.                            2b) This action is non-final.  
3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) Claim(s) 1-10 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.  
5) Claim(s) \_\_\_\_ is/are allowed.  
6) Claim(s) 1-10 is/are rejected.  
7) Claim(s) \_\_\_\_ is/are objected to.  
8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) The specification is objected to by the Examiner.  
10) The drawing(s) filed on 18 September 2003 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All    b) Some \* c) None of:  
1. Certified copies of the priority documents have been received.  
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) Notice of References Cited (PTO-892)  
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) Notice of Informal Patent Application (PTO-152)  
6) Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Drawings***

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "12" has been used to designate both "volatiles passing through the membrane (2)" and "oil circulation".
3. Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

4. The abstract of the disclosure is objected to because the abstract fails to provide any details of how the invention determines the condition of motor oil. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details and should include that which is new in the art to which the invention pertains. Correction is required. See MPEP § 608.01(b).

5. The disclosure is objected to because of the following informalities:

Page 2, line 20: A -- comma -- should be inserted prior to the term "such".

Page 3, line 31: A -- comma -- should be inserted after the symbol "Mo".

Page 4, line 1: A -- comma -- should be inserted after the symbol "Ce".

Page 4, line 2: A -- comma -- should be inserted after the symbol "Pt".

Page 6, lines 3-6: The disclosure recites that "oil circulation" is represented by reference numeral 12; however, reference numeral 12 has been previously used to represent "volatile constituents", see page 5, lines 29 and 30.

Page 6, line 20: The term "Teflon" should corrected to read -- TEFLON -- and be accompanied by the generic terminology.

Page 6, line 21: A -- comma -- should be inserted prior to the term "such".

Page 8, line 7: A -- comma -- should be inserted after the term "impedance".

Page 8, line 18: A -- comma -- should be inserted after the symbol "Mo".

Page 8, line 24: A -- comma -- should be inserted after the symbol "Pt".

Appropriate correction is required.

### ***Claim Objections***

6. Claim is objected to because of the following informalities:

Re claim 5, claim line 6: A -- comma -- should be inserted after the symbol "Ce".

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,987,976 (Sarangapani).

With respect to the limitations of claim 1, the reference to Sarangapani discloses a method for determining the condition of engine oil based on modeling comprising providing a sensor arrangement configured to determine a concentration of volatile constituents of the oil. The reference states that the oxidation of the oil is determined using sensors within the oil such that an amount of sulfur that may be converted to

sulfuric acid is determined. Additional parameters are measured to determine the condition of the oil.

With respect to the limitation of claim 2, the reference discloses that an alert may be delivered to an operator on board a machine driven by the engine when the oil's useful life is approaching the end based upon a total base number threshold, see claims 17-19.

With respect to the limitation of claim 3, the reference to Sarangapani discloses that various engine parameters as well as oxidation is utilized to create a total base number (TBN) of the engine oil, which is used to determine a value of TBN depletion over time, col. 4, lines 22-33.

9. Claims 1, 2, 4, 6, and 8 are rejected under 35 U.S.C. 102(a) as being anticipated by US 6,421,588 (Janata).

With respect to the limitations of claim 1, the reference to Janata ('588) discloses a system for determining the condition of lubricating oil in an engine, col. 1, lines 14-17, comprising an arrangement/sensor array (18) configured to determine concentrations of volatile constituents, col. 1, lines 31-35, col. 3, lines 19-28, col. 6, lines 55-61, of the oil.

With respect to the limitation of claim 2, the reference to Janata ('588) discloses that the system is configured for use onboard a motor vehicle, col. 1, lines 58-62 and col. 2, lines 8-33.

With respect to the limitation of claim 4, the reference to Janata ('588) discloses that the sensor array (18) contains multiple sensing elements, one of which may include a semiconducting tin oxide type sensor, col. 3, lines 45-52.

With respect to the limitations of claim 6, the reference to Janata ('588) discloses that other suitable sensors may include surface acoustic wave devices, col. 7, lines 30-33.

With respect to the limitations of claim 8, the reference to Janata ('588) discloses that aromatic hydrocarbons, such as benzaldehyde, are present in the head space above the oil, and are measured by the sensor array (18), col. 6, lines 54-64.

### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,421,588 (Janata) in view of US 5,942,676 (Potthast et al.).

With respect to the limitations of claim 5, the reference to Janata ('588) only discloses the sensor element is comprised of tin oxide. The reference to Janata fails to disclose that the tin oxide sensor comprises other additives. The reference to Potthast et al. discloses a semiconducting metal oxide sensor for use in detecting combustible gases. The sensor utilizes a base material of stannic oxide (SnO<sub>2</sub>). The reference

further discloses that the metal oxide is doped with a precious metal additive, such as palladium (Pd), in a concentration of 0.5 to 3 mol %. Additionally, the metal oxide can also contain admixtures in the form of oxides of bivalent elements, such as zinc (Zn) or a trivalent element, such as aluminum as oxide (Al<sub>2</sub>O<sub>3</sub>), in concentrations of 0.01 to 0.3 mol %. Providing additives to the metal oxide semiconductor would have been obvious to one of ordinary skill in the art as a means of making a more efficient sensor given that the addition of precious metal is used to influence the speed of the sensor, and the addition of the metal oxide admixture is used to limit crystallite growth following conclusion of the production process, which in turn improves the resistance to aging of the sensors.

12. Claims 7, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,421,588 (Janata) in view of JP 1-315219 (Kobayashi).

With respect to the limitation of claim 7, the reference to Janata ('588) fails to disclose an arrangement whereby a volatile permeable membrane is utilized. The reference to Kobayashi discloses a monitor for dissolved gas in oil comprising an oil chamber (1); a gas permeable membrane (6); and a gas sensor (9) located in a gas chamber (2) for identification of dissolved gas (6) from the oil chamber (1). Modifying the chamber of Janata to include a volatile permeable membrane would have been obvious to one of ordinary skill in the art as a means of sealing the chamber to prevent potential contamination of the sensor array by oil contacting the array.

With respect to the limitation of claim 9, the reference to Janata ('588) discloses a separate chamber for the sensory array (18) away from the oil reservoir (12); however, the reference fails to teach a membrane separating the oil reservoir. The reference to Kobayashi discloses a gas chamber (2) that is separated from the oil-containing region (1) by the membrane (2). Providing a separate gas chamber would have been obvious to one of ordinary skill in the art as means of isolating the sensor from the oil environment, thus reducing contamination of the sensor.

With respect to the limitation of claim 10, the reference to Janata fails to disclose a membrane in contact with the oil. The reference to Kobayashi discloses that the membrane (6) is contained within the oil chamber (1). Contacting the membrane with the oil contained in the oil chamber would have been obvious to one of ordinary skill in the art as a means of increasing the amount of gas gathered from the oil by reducing the distance the gas has to flow to reach the membrane.

### ***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure.

The prior art to US 6,128,561 (Janata) is the parent application/patent to the Janata reference cited in the rejection above.

The prior art to US 4,058,373 (Kurz et al.) discloses a combustible gas-in-oil detector for use with an electrical transformer comprising an oil flow line, a gas permeable membrane, a gas chamber, and chemical analysis means.

The prior art to US 4,796,204 (Inoue) discloses an oil degradation warning system whereby multiple sensors are provided for sensing parameters that are closely related to degradation factors of the oil. Additionally, the basicity of the oil is used to determine if the oil needs to be changed.

The prior art to US 5,523,692 (Kuroyanagi et al.) discloses an oil deterioration detector comprising an electrode whose electric potential varies in response to acidity and/or basicity of oil to be measured.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Larkin whose telephone number is 571-272-2198. The examiner can normally be reached on 8:00 AM - 5:00 PM Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on 571-272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel Larkin  
AU 2856  
06 July 2004



DANIEL S. LARKIN  
PRIMARY EXAMINER